

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT**  
(Under 37 CFR 1.97(b) or 1.97(c))

Docket No.  
DPC0012

In Re Application Of: **George Frederic Galvin**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/552,981	10/12/2005				

Title: **PISTON**

Address to:  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

**37 CFR 1.97(b)**

1. ☒ The Information Disclosure Statement submitted herewith is being filed within three months of the filing of a national application other than a continued prosecution application under 37 CFR 1.53(d); within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; before the mailing of a first Office Action on the merits, or before the mailing of a first Office Action after the filing of a request for continued examination under 37 CFR 1.114.

**37 CFR 1.97(c)**

2. ☐ The Information Disclosure Statement submitted herewith is being filed after the period specified in 37 CFR 1.97(b), provided that the Information Disclosure Statement is filed before the mailing date of a Final Action under 37 CFR 1.113, a Notice of Allowance under 37 CFR 1.311, or an Action that otherwise closes prosecution in the application, and is accompanied by one of:
- ☐ the statement specified in 37 CFR 1.97(e);
- OR**
- ☐ the fee set forth in 37 CFR 1.17(p).

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT (Under 37 CFR 1.97(b) or 1.97(c))				Docket No. DPC0012					
Re Application of: George Frederic Galvin									
Application No. 10/552,981	Filing Date 10/12/2005	Examiner	Customer No.	Group Art Unit	Confirmation No.				
Title: PISTON									
<p align="center"><b>Payment of Fee</b> (Only complete if Applicant elects to pay the fee set forth in 37 CFR 1.17(p))</p> <p><input type="checkbox"/> A check in the amount of _____ is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge and credit Deposit Account No. _____ as described below.</p> <p><input type="checkbox"/> Charge the amount of _____</p> <p><input type="checkbox"/> Credit any overpayment.</p> <p><input checked="" type="checkbox"/> Charge any additional fee required.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b></p> <table border="1"><thead><tr><th>Certificate of Transmission by Facsimile*</th><th>Certificate of Mailing by First Class Mail</th></tr></thead><tbody><tr><td>I certify that this document and authorization to charge deposit account is being facsimile transmitted to the United States Patent and Trademark Office (Fa  (Date)  Signature  Typed or Printed Name of Person Signing Certificate</td><td>I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on February 9, 2006 (Date) Signature of Person Mailing Correspondence Thomas J. Mauch Typed or Printed Name of Person Mailing Certificate</td></tr></tbody></table> <p>*This certificate may only be used if paying by deposit account.</p> <p>Signature</p> <p>Dated: February 9, 2006</p>						Certificate of Transmission by Facsimile*	Certificate of Mailing by First Class Mail	I certify that this document and authorization to charge deposit account is being facsimile transmitted to the United States Patent and Trademark Office (Fa  (Date)  Signature  Typed or Printed Name of Person Signing Certificate	I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on February 9, 2006 (Date) Signature of Person Mailing Correspondence Thomas J. Mauch Typed or Printed Name of Person Mailing Certificate
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I certify that this document and authorization to charge deposit account is being facsimile transmitted to the United States Patent and Trademark Office (Fa  (Date)  Signature  Typed or Printed Name of Person Signing Certificate	I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on February 9, 2006 (Date) Signature of Person Mailing Correspondence Thomas J. Mauch Typed or Printed Name of Person Mailing Certificate								
CC:									



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

the patent application of:	)	Before the Examiner
	)	
George Frederic Galvin	)	
	)	
Serial No: 10/552,981	)	Group Art Unit:
	)	
Filing Date: October 12, 2005	)	
	)	
PISTON	)	

**INFORMATION DISCLOSURE STATEMENT**

Applicants hereby submit the attached documents listed on the attached PTO Form 1449 in accordance with 37 CFR §1.97(b)(3), as these documents are being submitted before the first Office Action. Copies of the cited items are enclosed in accordance with 37 C.F.R. § 1.98.

DE3612842 discloses a reciprocating piston for use in an internal combustion engine. The piston includes an adjustable compression space. The device for adjusting the compression space includes a wall section comprising a memory alloy which automatically adjusts the compression space based upon temperature changes. The composition of the alloy also allows for reverse deformation in response to a decrease in temperature. Thus, at a low temperature the device sets a high compression ratio, and at a high temperature the device sets a low compression ratio. The positioning of a wall section of the device opposite a recess in the piston head achieves low dependent automatic control of the compression ratio and low dependent automatic adjustment of the combustion space geometry. In addition, an overall improvement of the engine efficiency and the improved introduction of the fuel consumption at a partial load are also obtained.

DE3139686 discloses an invention in piston technology designed to save fuel. Specifically, the patent teaches springs fitted between the connecting rod and the piston. This arrangement allows for compression at the lower engine speeds to be adjusted to a higher level without becoming too high in the upper speed range. As a result, a carburetor engine requires less fuel. In addition, this arrangement allows pistons to draw in fuel more efficiently and more

completely expel exhaust gases. Furthermore, the springs take up the inertia forces of the piston at the top dead center positions and subsequently release these forces as necessary. This arrangement also achieves desirable results in a fuel injected engine.

U. K. 2,318,151 teaches an engine piston and a connecting rod assembly. The assembly includes a cup shaped liner made of carbon steel. The liner is affixed inside a hollow piston manufactured from aluminum. The assembly further includes a pin fitted within an aperture located in the cylindrical carrier. The cylindrical cover has a sliding fit within a liner. A ring limits the movement of the carrier towards the crank shaft. A set of disc springs made of titanium sit intermediate the top of the carrier and the crown of the piston in order to bias the connecting rod away from the piston. Alternatively, a spring may be positioned between the ends of the connecting rod and the piston. This arrangement is such that the piston may only move in the direction of the crank pin a distance equivalent to that of the clearance height. Ignition occurs before top dead center so that the piston is at first forced inwards against the force of the springs, which increases the volume above the piston causing a reduction in pressure and temperature in the cylinder. The energy stored in the springs is released after top dead center resulting in increased efficiency and a reduction in exhaust emissions.

WO 00/77367A2 discloses a piston and connecting rod assembly for an internal combustion engine comprising a piston, a connecting rod and a spring. The connecting rod includes a first end operatively associated with the piston for movement therewith and a second end connected to a rotating output shaft. The spring acts between the piston and the connecting rod to bias the connecting rod away from the crown of the piston. The assembly is such that the spring stores energy as the spring is compressed by expanding gases from combustion occurring during the ignition stroke. This energy is substantially equal to the energy returned during the subsequent power stroke.

WO 96/34190 A1 relates to a method of operating an internal combustion engine during the combustion process. The process makes it possible to brake the increase of gas pressure at the beginning of combustion. The increase in gas pressure is partially replaced by a lengthened

substantially isobaric process, i.e., a process in which the combustion pressure remains substantially steady. In this way, the combustion rate and the variable volume of the combustion chamber can be optimally synchronized to improve the engine operation.

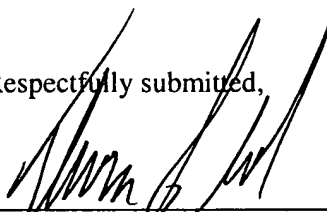
DE1823140 was cited by the International Examiner as being relative to claim 1. The Examiner placed this patent in Category A, meaning that the patent defined the general state of the art, but is not considered to be particular relevance. In doing so, the Examiner cited page 2, line 1 through line 9 and referenced Figure 1.

DE3021093 shows a cylindrical arrangement showing a main portion and a secondary portion 5, assisted by spring 6. The secondary portion 5 is movable between the position of Figures 1 and 2.

The filing of this Information Disclosure Statement shall not be construed as an admission that the information cited is, or is considered to be, material to patentability as defined in § 1.56(b), or that these documents are prior art.

It is believed that no fee is required for consideration of the submitted items. Should any fee be required, however, please charge such fee to Deposit Account No. 02-0387, but not to include any payment of issue fees.

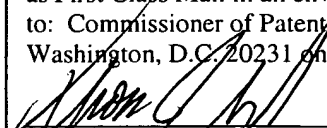
Respectfully submitted,



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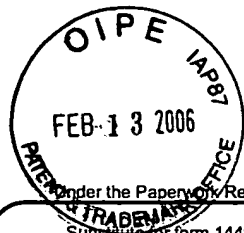
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I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on February 9, 2006.



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Thomas J. Mauch



PTO/SB/08A (07-05)  
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Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

### Complete if Known

Application Number	10/552,981
Filing Date	10/12/2005
First Named Inventor	Galvin
Art Unit	
Examiner Name	
Attorney Docket Number	DPC0012

Sheet 1 of 2

### U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US- 2,323,742	07-06-1943	Webster	
		US- 4,031,868	06-28-1977	Karaba et al.	
		US- 4,137,873	02-06-1979	Caswell, Sr.	
		US- 4,469,055	09-04-1984	Caswell	
		US- 5,769,042	06-23-1998	Popadiuc	
		US- 5,970,944	10-26-1999	Kawamura	
		US- 6,223,703 B1	05-01-2001	Galvin	
		US- 6,907,849 B2	06-21-2005	Galvin	
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### FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
		DE 1813140	06-18-1970	Gehrke		
		DE 3612842	10-22-1987	Bayerische Motoren		✓
		DE 3139686	04-21-1983	Derer		✓
		GB 2318151 A	04-15-1998	Galvin		✓
		WO 00/77367 A2	12-21-2000	Galvin		✓
		WO 96/34190	10-31-1996	Popadiuc		✓

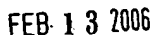
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Approved for use through 07/31/2006 OMB 0651-0031

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Supplemental Form 1449/PTO

*(Use as many sheets as necessary)*

Sheet	2	of	2
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**Complete if Known**

Application Number	10/552,981
Filing Date	10/12/2005
First Named Inventor	Galvin
Art Unit	
Examiner Name	
Attorney Docket Number	DPC0012

## U. S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> *Number <sup>4</sup> *Kind Code <sup>5</sup> (if known)	MM-DD-YYYY			
		DE 3021093	12-10-1981	Kloeckner Huboldt		

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